

Ground Use Sensor

Along with airborne and spaceborne instruments, remote sensing techniques employ a number of ground use sensory systems for measuring and analyzing radiation reflected from Earth targets to discriminate among classes of visually-similar objects. One use of such systems is "ground truthing," making on-the-spot examinations of ground targets as a means of verifying satellite data. Ground use systems can also be employed independently in a wide range of applications.

An example of a ground use device is the system shown in the accompanying photo. Called the Hand Held Ratioing Radiometer, it was developed by Jet Propulsion Laboratory in the course of NASA-sponsored research. It is now being manufactured and sold by Barringer Research Limited, Rexdale, Ontario under a patent license. Designed for field portable use, the battery-powered unit weighs only 12 pounds.

A radiometer is an instrument for measuring the intensity of reflected radiation. The Barringer Ratioing Radiometer has an added capability: it simultaneously analyzes radiation intensities in two separate bands of the spectrum and calculates the ratio of one to the other; this affords more positive identification of the material being analyzed. The "reflectance ratio" is displayed in digital form; this information enables analysts to determine the particular characteristics of the target.

One application, illustrated in the photo, is examination of rock for the presence of specific minerals; in addition to its analytical capability, the system offers extra field prospecting utility by providing instant results on-site, eliminating the necessity for laboratory analysis of samples. Another use is determining the health status and yield potential of agricultural crops. Among many other applications are studies of water quality, water color as an indication of sediment, algae growth, soil moisture content and other soil characteristics, and pollution effect on forest cover.

